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IN THIS ISSUE

A Report on the Possible Action of Promin in Leprosy
Establishments Licensed for Sale of Biological Products
Report on Sickness Absenteeism, Second Quarter of 1945

CONTENTS

	Page
The therapeutic effect of promin in leprosy. G. H. Faget and R. C. Pogge	1165
Biological products. Establishments licensed for the preparation and sale of viruses, serums, toxins, and analagous products	1172
Sickness absenteeism among industrial workers, second quarter of 1945, with an inquiry into the occurrence of digestive diseases, 1936–45. W. M. Gafafer	1179
Prevalence of communicable diseases in the United States, August 12–September 8, 1945	1181
Occupational dermatoses abstracts. A review	1186
Deaths during week ended September 8, 1945	1186

PREVALENCE OF DISEASE

United States:	
Reports from States for week ended September 15, 1945, and comparison with former years	1187
Weekly reports from cities:	
City reports for week ended September 8, 1945	1191
Rates, by geographic divisions, for a group of selected cities	1193
Plague infection in Alpine and Kern Counties, Calif	1193
Territories and possessions:	
Panama Canal Zone—Notifiable diseases—July 1945	1194
Foreign reports:	
Canada—Provinces—Communicable diseases—Week ended August 25, 1945	1195
China—Notifiable diseases—May 1945	1195
Finland—Notifiable diseases—July 1945	1196
Jamaica—Notifiable diseases—4 weeks ended August 25, 1945	1196
New Zealand—Notifiable diseases—4 weeks ended August 11, 1945	1196
Sweden—Notifiable diseases—June 1945	1197
Reports of cholera, plague, smallpox, typhus fever, and yellow fever received during the current week—	
Cholera	1197
Plague	1197
Smallpox	1197
Typhus fever	1198
Yellow fever	1198

* * *

Activities of industrial nurses and recommended standards for nursing in industry. A review	1198
Experimental studies on the toxicity and potential dangers of trinitrotoluene (TNT). A review	1199

Public Health Reports

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THE THERAPEUTIC EFFECT OF PROMIN IN LEPROSY

By G. H. FAGET, *Medical Director*, and R. C. POGGE, *Passed Assistant Surgeon (R), United States Marine Hospital (National Leprosarium), Carville, La.*

In November 1943 a preliminary progress report on the treatment of leprosy with promin (*1*) was published, in which improvements were reported in a considerable percentage of cases. The present report is an extension of this earlier paper with an attempt at an explanation of the mode of action of promin. This report is based on the treatment of 137 patients at the National Leprosarium who have received 32,000 intravenous injections of promin totaling 126,961 gm. The average daily dose per patient, including days of rest, when no promin was given, varied from 0.4 gm. to 4.6 gm. The dosage of promin was usually started at 1 gm. daily intravenously and gradually increased in an attempt to reach the optimal dosage of 5 gm. daily. In some patients, who developed repeated toxic reactions, the maximum daily dose of promin did not exceed 2 gm. The size of the daily dose in individual cases, therefore, depended mostly upon the patient's tolerance to the drug. Thus the routine technique at the present time consists of daily intravenous injections of promin in doses varying from 2 to 5 gm., for 6 days a week, in courses of 2 weeks' duration, with 1 week of rest between courses. Since this technique has been adopted toxic reactions have been few and of a minor nature. The week of rest usually allows sufficient time for the hematopoietic system to restore the blood cells lost through the hematolytic action of promin.

The present study shows that the improvements observed in the earlier report continue to occur, and in a larger percentage of cases than previously reported. Thus, the longer the duration of treatment, the greater seems to be the percentage of improvement. It is also observed that it is in the group of patients receiving the larger doses of the drug that the most consistent improvement occurred.

TABLE 1.—*Relation of average daily dose of promin to improvement*

Average daily dose of promin (gm.)	Total patients treated			Patients treated less than 6 months			Patients treated more than 6 months		
	Number of patients	Number improved	Percent improved	Number of patients	Number improved	Percent improved	Number of patients	Number improved	Percent improved
0.4 to 0.9	12	5	41.7	5	2	60	7	3	43
1 to 1.9	65	36	55.7	9	1	11	56	35	62.5
2 to 2.9	42	32	76.2	13	6	46	29	26	89.3
3 to 4.6	18	7	39	12	1	8.3	6	6	100
Total	137	80	58.4	39	10	25.6	98	70	71.4

TABLE 2.—*Relation of duration of treatment to improvement*

Duration of treatment	Number of patients	Percent improved
Less than 6 months	38	25.6
6 months to 1 year	36	63.9
1 to 2 years	14	71.4
2 to 3 years	42	73.8
3 to 4 years	6	100
Total	137	58.4

TABLE 3.—*Relation of total dosage of promin to improvement*

Total dosage (gm.)	Number of patients	Number improved	Percent improved
Less than 500	52	15	28.8
500 to 1,000	40	29	72.5
1,000 to 2,000	21	16	76.2
2,000 to 5,000	24	20	83.33
Total	137	80	58.4

From the above tables it is evident that promin produced improvement in the majority of treated patients. The improvement increased in proportion to the duration of treatment, the total dosage of promin, and, to a less extent, the size of the average daily dose administered.

There were only two patients in whom it was evident that the disease became worse under treatment. Each of these patients had an advanced mixed type of leprosy with laryngeal involvement. Treatment had to be discontinued in each case because of toxic reactions after 1 month and 3½ months of treatment, respectively; therefore, adequate treatment was not given in either case. On the other hand, two cases of lepromatous leprosy became arrested following 17 and 29 months of promin therapy, respectively.

During over 3 years of experimental study at the National Leprosarium accumulated data indicate that improvement under promin therapy in leprosy is definite and is not attributable to spontaneous or coincidental favorable changes in the course of the disease. It is the purpose of this paper to discuss the probable mode of action of promin in leprosy.

In the experimental treatment of such a chronic disease as leprosy, whenever new remedies are tried, there are five possibilities to be considered in explanation of a favorable response. These are:

1. Improvement due to psychological response of patient.
2. Improvement due to spontaneous remission of the disease.
3. Improvement purely symptomatic and lacking objective substantiation.
4. Improvement limited to effect on secondary infection or other complicating conditions.
5. Improvement due to chemotherapeutic or other specific action on the disease.

These different possibilities in the case of promin therapy of leprosy will be discussed separately.

Improvement due to psychological response of the patient.—Even though some patients claim greater symptomatic improvement than is objectively evident, this does not explain all of the action of promin in leprosy. The medical staff has based its opinion of improvement mainly on objective findings, which are often confirmed by photographic and laboratory data.

Although early favorable response from the patient's standpoint has been noted with other experimental treatments at the National Leprosarium, these have not withstood the test of time. In such instances the patients themselves sooner or later discovered that they were mistaken and their enthusiasm was replaced by disappointment. This has not been the case with promin which has now been in use for over 3 years. Patients continue to have faith in it since they have noticed that the improvement has not been short-lived, but is progressive.

With other experimental treatments given over a moderate period of time, even to a much smaller number of patients, progressive advance of the disease has been noted in spite of treatment in a considerable percentage of cases. With promin, on the contrary, this is unusual, only two patients, or 1.46 percent of cases, becoming worse. Other experimental treatments have been abandoned by the medical staff as valueless in a much shorter period of time than that during which promin has now been employed at the National Leprosarium.

For these reasons the effects of promin in leprosy cannot be considered to be on a purely psychological basis.

Spontaneous remissions.—The patients who first volunteered for promin treatment were those who were not doing satisfactorily on routine treatment. They were for the most part far advanced cases of lepromatous or mixed types. It is not in such a group of patients that spontaneous remissions are likely to occur. The preliminary report (*1*) showed that promin and a related drug (Internal Antiseptic 307) produced better results than were obtained in a control group of patients.

Only 2 of the 137 patients treated were of the purely neural type.

The lepromatous and mixed cases were the types especially selected for treatment. Since patients with these types of the disease carry the worst prognosis and are the least liable to undergo spontaneous remissions, the improvements noted in them cannot be attributed to this cause.

Improvement purely symptomatic and lacking in objective substantiation.—That the good effects of promin are not entirely of a symptomatic nature is shown in the fact that they are evident to the doctor as well as to the patient. It is true that many patients report improvement in their general health, increase in appetite, greater strength and energy, more restful sleep, and less upper respiratory difficulty, but these symptomatic improvements are thought to result secondarily from effects of promin on the disease processes in the body.

Not only is objective improvement shown in the healing of leprous ulcerations but also in the subsidence of leprous lesions in the form of nodules and infiltrations. Experience with promin therapy is that the nodules of leprosy either remain unchanged or flatten out and become smaller and at times are completely absorbed. At other times the nodules disintegrate and are replaced by scar tissue. These changes are demonstrated in serial photographs. Definite improvement in ocular, laryngeal, nasal, and oral manifestations of the disease have also been noted. The improvement attributed to promin is therefore objective and not purely subjective.

Effects limited to secondary infection or other complicating conditions.—Secondary infection is not uncommon in leprosy and probably accounts for some of the patient's feeling of illness. It is also probable that secondary infection frequently prevents the healing of leprous and trophic ulcers, which, when active, are a drain on the patient's general health. Promin is not the only chemotherapeutic agent which is helpful in the healing of ulcerations in leprosy. Sulfanilamide, sulfathiazole, sulfadiazine, and penicillin, employed both locally and systemically, are even more potent than promin in clearing up secondary pyogenic infection and in healing chronic ulcerations. After prolonged experience, however, it is found that these other drugs show little, if any, of the effects of promin on the nodular lesions of leprosy. Furthermore, there appears to be less tendency for ulcers to recur when healed under the influence of promin than when they are healed under the influence of these other chemotherapeutic agents. The benefits of promin therapy cannot, therefore, be attributed entirely to its effect on secondary infection nor does it seem that its action is limited to its effects on other complicating diseases.

Chemotherapeutic effect of promin in leprosy.—Since the first four hypotheses do not fully explain the improvement produced by promin in leprosy, it is possible that a chemotherapeutic action is tenable.

The action of promin in leprosy has been observed to produce favorable changes on the specific lesions, the granulomatous nodules of the disease. This improvement may be due to a bacteriostatic or bacteriolytic action on Hansen's bacillus, but there is no way to prove this because the causative germ cannot be cultivated, and the disease cannot be reproduced in laboratory animals by inoculation of human leprous material.

Among the 62 patients treated for more than 1 year, there has occurred a reversal of the bacterioscopy from positive to negative on several consecutive monthly examinations in over 10 percent of the cases. An additional 30 percent have had occasional negative tests since starting on the promin treatment. These laboratory findings tend to show that in at least 40 percent of cases there has occurred a diminution in the number of infective organisms in the lesions of the disease. This suggests that promin has some chemotherapeutic action in leprosy.

False positive serologic reactions for syphilis have frequently been reported in leprosy. In a report from the National Leprosarium (*2*) it was shown that fluctuations in the degree of the positive serology are closely correlated to the clinical activity of leprosy. A higher percentage of positive tests was present in advanced cases. A reversion from a positive to a negative serology frequently accompanied improvement or arrest of the disease. Hence, a comparison of changes in serology in promin-treated patients with those not so treated is of interest, as shown in the following table:

TABLE 4.—*Effect of promin on serologic reaction in leprosy*

A. PROMIN-TREATED PATIENTS

Number patients	Kahn test			Kolmer test		
	Positive		Negative	Positive		Negative
	Number	Percent		Number	Percent	
137	67	48.9	70	65	48.2	70

REPEATED SEROLOGIC TESTS

Number patients	Kahn test					Kolmer test					
	No change		Changed from—			No change		Changed from—			
	Positive, remaining positive	Negative, remaining negative	Positive to negative		Negative to positive	Positive, remaining positive	Negative, remaining negative	Positive to negative		Negative to positive	
			Number	Percent				Number	Percent	Number	Percent
37	16	11	8	21.6	0	12	11	12	34.2	2	5.7

TABLE 4.—*Effect of promin on serologic reaction in leprosy*—Continued

B. CONTROL GROUP OF PATIENTS

Number patients	Kahn test			Kolmer test		
	Positive		Negative	Positive		Negative
	Number	Percent		Number	Percent	
240	108	45.0	132	101	44.3	127

REPEATED SEROLOGIC TESTS

Number patients	Kahn test						Kolmer test					
	No change		Changed from—				No change		Changed from—			
	Positive, remaining positive	Negative, remaining negative	Positive to negative		Negative to positive		Positive, remaining positive	Negative, remaining negative	Positive to negative		Negative to positive	
			Number	Percent	Number	Percent			Number	Percent	Number	Percent
100	35	41	8	8.0	16	16.0	33	42	10	10.0	15	15.0

From the above table it is apparent that when changes in serology occurred in the control groups of patients there was a greater tendency for negative tests to become positive (leprosy progressing unfavorably) than vice versa. This occurred in the proportion of 16 to 8 percent and 15 to 10 percent in the two tests respectively, whereas in the promin-treated group of patients the tendency was definitely in favor of the serology reverting to negative (leprosy improving) under treatment. Attention is drawn to the fact that at the beginning of the promin treatment 48.9 percent of the treated patients were seropositive as compared to 45 percent of the control group of patients. This indicates that the initial prognosis of treated patients was no more favorable than that of the patients as a whole. Yet after prolonged treatment with promin a favorable change in serology was definitely more frequent in the promin-treated group than in those not treated with promin.

DISCUSSION

No claim is made that promin is a specific remedy for leprosy although it has been shown to have a favorable effect in this disease. Its action is slow and improvements usually become manifest only after 6 or more months of treatment. It must be remembered, however, that even if a drug were found which was bacteriocidal for *M. leprae* it would of necessity work slowly. Leprosy attacks principally the skin and peripheral nervous system, access to which, through the blood stream, is inferior to that of the more highly vascular organs

Case 986. Before February 1944. Far advanced case.

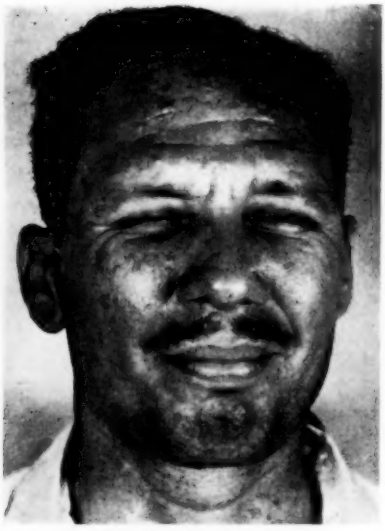
Case 986. After February 1945. Total promin 825 gm.

Case 1019. Before treatment. Lesions 2½ years' duration. Moderately advanced lepromatous type.

Case 1019. After 1 year's treatment. Total promin 921 gm.

Case 493. Before treatment. Lesions 8 years' duration. Far advanced lepromatous type.

Case 493. After 1 year's treatment. Total promin 790 gm.



Case 1593. Before treatment. Lesions 1 year's duration. Early minimal lepromatous type.

Case 1593. After 3 months' treatment. Total promin 155 gm.

of the body. Hansen's bacillus, which is generally considered to be the causative agent of leprosy, is a very resistant type of micro-organism which is covered by a protective waxy capsule. In perhaps no other bacterial disease of man are the causative micro-organisms found in such abundance in the lesions of the disease as they are in leprosy. The incubation period of leprosy is a long one and the course of the disease is of slow evolution, usually requiring years to reach an advanced stage. Furthermore, the patients treated at the National Leprosarium have had the disease for an average of more than 4 years at the time of their admission. All of the above circumstances would tend to deter the chemotherapeutic action of any remedy under trial.

The term "specific" has been used professionally as applicable to a drug which has a direct chemotherapeutic action against the etiologic agent of a disease. Since *M. leprae* cannot be cultivated on artificial media, nor can the human disease be reproduced in laboratory animals, it becomes difficult to prove any bacteriostatic or bacteriocidal action against it. For this reason promin cannot be proved to be a specific for leprosy but there is evidence that it has at least an inhibitory effect on the progress of the disease and even causes retrogression in some lesions, suggestive of chemotherapeutic action. In confirmation of the objective improvement produced by promin the accompanying photographs are submitted.

There is hope that continued scientific research will produce a faster-acting, more specific drug for the mycobacterial diseases. In the meanwhile promin must be considered the best experimental treatment ever tested at the National Leprosarium. Preliminary studies suggest that diasone has a similar action to promin and further trial may prove that it is a more satisfactory remedy than promin.

CONCLUSION

Evidence of clinical improvement in a study of 137 leprosy patients treated with promin indicates that at present it is the treatment of choice for this disease. While it cannot be proved that promin possesses any chemotherapeutic properties against leprosy this seems to be the logical explanation for its mode of action in this disease. It is hoped, however, that further research will discover a still more powerful chemotherapeutic drug for the mycobacterial diseases.

REFERENCES

(*1*) Faget, G. H., Pogge, R. C., Johansen, F. A., Dinan, J. F., Prejean, B. M., and Eccles, C. G.: The promin treatment of leprosy. A progress report. Pub. Health Rep., **58**: 1729 (Nov. 26, 1943).

(*2*) Faget, G. H., and Ross, H.: Evaluation of positive Kolmer and Kahn tests in leprosy. Ven. Dis. Inf., **25**: 133 (May 1944).

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BIOLOGICAL PRODUCTS

Establishments Licensed for the Preparation and Sale of Viruses, Serums, Toxins, and Analogous Products

There is presented herewith a list of the establishments holding licenses issued by the Federal Security Agency in accordance with section 351 of an Act of Congress approved July 1, 1944, entitled "Public Health Service Act" (58 Stat. 682). Section 351 of this act is designed to regulate the sale of viruses, serums, toxins, or analogous products, or arsphenamine or its derivatives (or any other trivalent organic arsenic compound) in the District of Columbia, to regulate interstate traffic in said articles, and for other purposes.

The licenses granted to these establishments for the products mentioned do not imply an endorsement for the respective preparations. The granting of a license means that the establishment is inspected regularly as to the technical ability of the responsible personnel and as to the sanitary condition of the premises; it means that all products are manufactured by methods considered to be safe; it means that tests have been applied to the finished products to insure their safety and purity; it means that in all instances where there is an official standard of potency, or where an official test of potency is recognized, the products have been tested against such standards or by such a test; it means that the establishment also is required to carry out any other requirements specified by the National Institute of Health, designed to insure the continued safety, purity, and potency of the licensed products.

LICENSED AMERICAN ESTABLISHMENTS

Parke Davis and Co., Detroit, Mich.—License No. 1:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; dysentery, Shiga; gonococcus; meningococcus; B. odematiens; perfringens; scarlet fever streptococcus; V. septique; tetanus. **Therapeutic serums and analogous products:** Antianthrax; antidysenteric; antigonococcic; antimeningococcic; antipneumococcic; antistreptococcic. Globulin, immune (human); histamine azoprotein; plasma, normal human; serum, hemostatic (Lapenta); serum, meningococcus typing; serum, normal horse; serum, pneumococcus typing; thrombin.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (Cumming); rabies (killed virus); smallpox; typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; acne diplococcus; Brucella abortus; Brucella melitensis; cholera vibrio; colon bacillus; dysentery bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphod bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; prodigiosus bacillus; pseudodiphthera bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
4. *Bacterial antigens made from.*—Colon bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus.
5. *Modified bacterial derivatives made from.*—Colon bacillus; gonococcus; paratyphoid bacillus A; paratyphoid bacillus B; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
6. *Tuberculin preparations.*—Tuberculin B. F.; tuberculin old; tuberculin-purified protein derivative.
7. *Toxins, toxoids and venoms.*—Diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid.
8. *Allergenic extracts and analogous products.*—Allergenic extracts (including animal derivatives, foods, and pollens); poison ivy extract; Trichinella extract.
9. *Trivalent organic arsenicals.*—Dichlorophenarsine hydrochloride; oxophenarsine hydrochloride.

Sharp and Dohme, Philadelphia, Pa.—License No. 2:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Botulism; diphtheria; dysentery, Shiga; erysipelas streptococcus; B. histolyticus; B. odematiens; perfringens; scarlet fever streptococcus; V. septique; B. sordellii; tetanus. **Therapeutic serums and analogous products:** Antianthrax; antibrucella; antidysenteric; antierysipeloid; anti-Hemophilus influenzae type b; antimeningococcic; anti-Rocky Mountain spotted fever; antitularemic; antityphus; antivenin (Bothropic); antivenin (Crotalus terrificus); antivenin (Latrodectus mactans); antivenin (Nearctic crotalidae). Albumin, normal serum; cells, human blood; fibrin foam; globulin, immune (human); globulin, immune serum (human); plasma, normal human; serum, measles immune (human); serum, meningococcus typing; serum, normal horse; serum, normal human; serum, scarlet fever immune (human); thrombin.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus); rabies (Pasteur); Rocky Mountain spotted fever; smallpox; typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; Brucella abortus; Brucella suis; cholera vibrio; colon bacillus; dysentery bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; B. tularense; typhoid bacillus.
4. *Bacterial antigens made from.*—Acne bacillus; Brucella abortus; Brucella melitensis; Brucella suis; colon bacillus; dysentery bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; proteus bacillus; pyocyaneus bacillus; staphylococcus aureus; streptococcus; typhoid bacillus.
5. *Sensitized bacterial vaccines made from.*—Acne bacillus; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
6. *Tuberculin preparations.*—Tuberculin B. E.; tuberculin B. F.; tuberculin old; tuberculin-purified protein derivative; tuberculin T. R.
7. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; bee venom.
8. *Allergenic extracts and analogous products.*—Poison ivy extract; poison oak extract.

Cutter Laboratories, Berkeley, Calif.—License No. 8:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; B. odematiens; perfringens; scarlet fever streptococcus; V. septique; tetanus. **Therapeutic serums and analogous products:** Antianthrax; antimeningococcic; antipertussis. Albumin, normal serum; fibrin foam; globulin, immune serum (human); plasma, normal human; serum, normal horse; thrombin.
2. *Vaccines made from viruses and rickettsiae.*—Equine encephalomyelitis; rabies (killed virus); smallpox.
3. *Bacterial vaccines made from.*—Acne bacillus; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; plague bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
4. *Bacterial antigens made from.*—Colon bacillus; staphylococcus aureus.
5. *Tuberculin preparations.*—Tuberculin old.
6. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; diphtheria toxiod; tetanus toxoid.
7. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens); poison ivy extract; poison oak extract.

Bureau of Laboratories, Department of Health, New York City.—License No. 14:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; tetanus. **Therapeutic serums and analogous products:** Antimeningococcic; antipneumococcic; serum, normal horse.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus); smallpox.
3. *Bacterial vaccines made from.*—Paratyphoid bacillus A; paratyphoid bacillus B; typhoid bacillus.
4. *Tuberculin preparations.*—Tuberculin old.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; diphtheria toxoid; tetanus toxoid.

Lederle Laboratories, Pearl River, N. Y.—License No. 17:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Botulism; diphtheria; dysentery, Shiga; erysipelas streptococcus; B. histolyticus; B. odematiens; perfringens; scarlet fever streptococcus; V. septique; B. sordellii; staphylococcus; tetanus. **Therapeutic serums and analogous products:** Antianthrax; antidysenteric; anti-Hemophilus influenzae type b; antimeningococcic; antipneumococcic; anti-Rocky Mountain spotted fever; antistaphylococcic; antityphus. Albumin, normal serum; globulin, hemostatic; globulin, immune (human); globulin, immune serum (human); plasma, normal human; serum, Hemophilus influenzae typing; serum, meningococcus typing; serum, normal horse; serum, pneumococcus typing.

2. *Vaccines made from viruses and rickettsiae.*—Encephalitis, herpes "F" strain; equine encephalomyelitis; rabies (killed virus); smallpox; Rocky Mountain spotted fever; typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; Brucella abortus; Brucella melitensis; Brucella suis; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; staphylococcus citreus; streptococcus; typhoid bacillus.
4. *Bacterial antigen made from.*—Pertussis bacillus.
5. *Tuberculin preparations.*—Tuberculin old.
6. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid; snake venom solution.
7. Allergenic extracts and analogous products.—Allergenic extracts (including pollens, animal derivatives, foods, vegetable derivatives, miscellaneous substances); poison ivy extract; poison oak extract; Trichinella extract.

Sherman Laboratories (G. H. Sherman, M. D., Founder), Detroit, Mich.—License No. 30:

1. *Bacterial vaccines made from.*—Acne bacillus; Brucella abortus; Brucella melitensis; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
2. *Bacterial antigens made from.*—Colon bacillus; gonococcus; micrococcus catarrhalis; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus.
3. *Toxins, toxoids and venoms.*—Diphtheria toxoid; staphylococcus toxoid.
4. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens); poison ivy extract; poison oak extract.

Abbott Laboratories, North Chicago, Ill.—License No. 43:

1. *Antitoxins, therapeutic serums, and analogous products.*—Plasma, normal human; thrombin.
2. *Bacterial vaccines made from.*—Friedländer bacillus; influenza bacillus; micrococcus catarrhalis; micrococcus tetragenus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus.
3. *Toxins, toxoids, and venoms.*—Tetanus toxoid.
4. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances); poison ivy extract.
5. *Trivalent organic arsenicals.*—Arsphenamine; arsphenamine, bismuth sulfonate; arsphenamine, neosilver; arsphenamine, silver; dichlorophenarsine hydrochloride; neoarsphenamine; sulfarsphenamine; sulfarsphenamine, trisodium.

Upjohn Co., Kalamazoo, Mich.—License No. 51:

1. *Antitoxins, therapeutic serums, and analogous products.*—Albumin, normal serum; fibrin foam; globulin, immune serum (human); thrombin.
2. *Bacterial vaccines made from.*—Colon bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
3. *Toxins, toxoids, and venoms.*—Diphtheria toxoid.

E. R. Squibb and Sons' Research and Biological Laboratories, New Brunswick, N. J.—License No. 52:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; erysipelas streptococcus; B. odematiens; perfringens; scarlet fever streptococcus; V. septique; staphylococcus; tetanus. **Therapeutic serums and analogous products:** Anti-Hemophilus influenzae type b; antimeningococcic; antipertussis; antipneumococcic; antistreptococcic; antivenin (Latrodectus mactans). Albumin; normal serum; fibrin foam; globulin, immune (human); globulin; immune serum (human); leucocyte extract; serum, normal horse; serum, pneumococcus typing; thrombin.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus); rabies (Pasteur); smallpox; typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; staphylococcus citreus; streptococcus; typhoid bacillus.
4. *Bacterial antigens made from.*—Staphylococcus aureus.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid.
6. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens); poison ivy extract; poison oak extract.
7. *Trivalent organic arsenicals.*—Arsphenamine; dichlorophenarsine hydrochloride; neoarsphenamine sulfarsphenamine.

Eli Lilly and Co., Indianapolis, Ind.—License No. 56:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; B. odematiens; perfringens; V. septique; tetanus. **Therapeutic serums and analogous products:** Antimeningococcic. Albumin, normal serum; globulin, immune serum (human); plasma, normal human; serum, hemostatic (Lilly); serum, normal horse.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (modified Harris); smallpox, typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
4. *Bacterial antigens made from.*—Acne bacillus; colon bacillus; gonococcus; influenza bacillus, micrococcus catarrhalis; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus.
5. *Tuberculin preparations.*—Tuberculin old.
6. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; diphtheria toxoid, tetanus toxoid.
7. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens and miscellaneous substances); fungus antigens; Trichinella extract.

Antitoxin and Vaccine Laboratory, Department of Public Health, Commonwealth of Massachusetts, Boston, Mass.—License No. 64:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; scarlet fever streptococcus. **Therapeutic serums and analogous products:** Anti-Hemophilus influenzae type b; antimeningococcic; antipneumococcic. Albumin, normal serum; globulin, immune (human); globulin, immune serum (human); serum, pneumococcus typing.
2. *Vaccines made from viruses and rickettsiae.*—Smallpox.
3. *Bacterial vaccines made from.*—Paratyphoid bacillus A; paratyphoid bacillus B; typhoid bacillus.
4. *Tuberculin preparations.*—Tuberculin old.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test; diphtheria toxoid.

United States Standard Products Co., Woodworth, Wis.—License No. 65:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; perfringens; V. septique; tetanus. **Therapeutic serums and analogous products:** Antimeningococcic.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus); smallpox.
3. *Bacterial vaccines made from.*—Acne bacillus; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
4. *Bacterial antigens made from.*—Staphylococcus albus; staphylococcus aureus.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; tetanus toxoid.
6. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens); poison ivy extract; poison oak extract.

D. L. Harris Laboratories, St. Louis, Mo.—License No. 66:
Rabies vaccine (Harris).

Arlington Chemical Co., Yonkers, N. Y.—License No. 67:

1. *Bacterial vaccines made from.*—Colon bacillus; Friedländer bacillus; micrococcus catarrhalis; micrococcus tetragenus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; staphylococcus citreus; streptococcus.
2. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances); poison ivy extract.

Winthrop Chemical Co., Inc., Rensselaer, N. Y.—License No. 69:

1. *Trivalent organic arsenicals.*—Acetylglycarsenobenzene; arsphenamine; arsphenamine, diglucoside; arsphenamine, silver; dichlorophenarsine hydrochloride; neoarsphenamine; sulfarsphenamine.

Diarsenol Co., Inc., Buffalo, N. Y.—License No. 70:

1. *Trivalent organic arsenicals.*—Arsphenamine; arsphenamine, sodium; neoarsphenamine; sulfarsphenamine.

Merck and Co., Inc., Rahway, N. J.—License No. 82:

1. *Trivalent organic arsenicals.*—Arsphenamine; neoarsphenamine; sulfarsphenamine.

Terrell Laboratories, Fort Worth, Tex.—License No. 84:
Rabies vaccine (killed virus).

Jensen-Salsbery Laboratories, Kansas City, Mo.—License No. 85:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Botulism. **Therapeutic serums and analogous products:** Antibrucella; antierysipeloid.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus).
3. *Bacterial vaccines made from.*—Brucella abortus; Brucella suis.

Hollister-Stier Laboratories, Spokane, Wash., Los Angeles, Calif., and Wilkinsburg, Pa.—License No. 91:

1. *Antitoxins, therapeutic serums, and analogous products.*—Serum, poliomyelitis immune (human).
2. *Bacterial vaccines made from.*—Acne bacillus; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; xerosis bacillus.
3. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances) poison ivy extract; poison oak extract.

Medical Arts Laboratory, Oklahoma City, Okla.—License No. 98:

1. Rabies vaccine (killed virus).

Bureau of Laboratories, Michigan State Department of Health, Lansing, Mich.—License No. 99:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; scarlet fever streptococcus; tetanus. **Therapeutic serums and analogous products:** Antimeningococcic; antipneumococcic. Plasma, normal human; serum, pneumococcus typing.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (Cumming); smallpox.
3. *Bacterial vaccines made from.*—Pertussis bacillus; typhoid bacillus.
4. *Tuberculin preparations.*—Tuberculin old.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; Scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; tetanus toxoid.

National Drug Co., Philadelphia, Pa.—License No. 101:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; B. odematiens perfringens; scarlet fever streptococcus; V. septique; staphylococcus; tetanus. **Therapeutic serums and analogous products:** Antimeningococcic; antipneumococcic. Globulin, immune (human); serum, normal horse; serum, pneumococcus typing.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus); smallpox.
3. *Bacterial vaccines made from.*—Acne bacillus; Brucella abortus; Brucella melitensis; Brucella suis; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; meningococcus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; pyocyaneus bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
4. *Bacterial antigens made from.*—Staphylococcus aureus.
5. *Tuberculin preparations.*—Tuberculin old.
6. *Toxins, toxoids, and venoms.*—Diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; streptococcus erythrogenic; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid.
7. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens and miscellaneous substances).

Mulford Colloid Laboratories, Philadelphia, Pa.—License No. 102:

Poison ivy extract; poison oak extract.

Allergy Laboratories, Oklahoma City, Okla.—License No. 103:

Allergenic extracts (including pollens, foods, animal derivatives, and miscellaneous substances).

C. F. Kirk Co., New York, N. Y.—License No. 105:

1. *Bacterial vaccines made from.*—Acne bacillus; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
2. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens).

Porro Biological Laboratories, Tacoma, Wash.—License No. 107:

1. *Bacterial vaccines made from.*—Micrococcus catarrhalis; pneumococcus; staphylococcus aureus; streptococcus.
2. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens, animal derivatives, foods, and miscellaneous substances).

Central Pharmacal Co., Seymour, Ind.—License No. 109:

1. *Bacterial antigens made from.*—Colon bacillus; Friedländer bacillus; gonococcus; micrococcus catarrhalis; pertussis bacillus; pneumococcus; pyocyaneus bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.

Pitman-Moore Co., Division of Allied Laboratories, Inc., Zionsville, Ind.—License No. 110:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; perfringens; V. septique; tetanus. **Therapeutic serums and analogous products:** Antierysipeloid. Globulin, immune (human); serum, normal horse.
2. *Vaccines made from viruses and rickettsiae.*—Equine encephalomyelitis; rabies (killed virus); typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; Brucella abortus; Brucella melitensis; Brucella suis; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; micrococcus catarrhalis; micro-

coccus tetragenus; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.

4. *Bacterial antigens made from.*—Colon bacillus; gonococcus; staphylococcus albus; staphylococcus aureus; streptococcus.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid.
6. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens); poison ivy extract; poison oak extract.

Wm. S. Merrell Co., Cincinnati, Ohio.—License No. 111:

1. *Bacterial vaccines made from.*—Friedländer bacillus; influenza bacillus; micrococcus catarrhalis; pneumococcus; staphylococcus albus; staphylococcus aureus; streptococcus.

Michael Reese Research Foundation, Chicago, Ill.—License No. 113:

1. *Antitoxins, therapeutic serums, and analogous products.*—Plasma, normal human; serum, measles immune (human); serum, mumps immune (human); serum, normal human; serum, poliomyelitis immune (human); serum, scarlet fever immune (human).

Milwaukee Serum Center, Columbia Hospital, Milwaukee, Wis.—License No. 117:

1. *Antitoxins, therapeutic serums, and analogous products.*—Serum, measles immune (human); serum, mumps immune (human); serum, normal human; serum, pertussis immune (human); serum, poliomyelitis immune (human); serum, scarlet fever immune (human).

Barry Allergy Laboratory, Detroit, Mich.—License No. 119:

1. *Bacterial vaccines made from.*—Friedländer bacillus; influenza bacillus; micrococcus catarrhalis; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; staphylococcus citreus; streptococcus.
2. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens); poison ivy extract; poison sumac extract.

Biological Laboratory, Illinois Department of Health, Chicago, Ill.—License No. 120:

1. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus).
2. *Bacterial vaccines made from.*—Paratyphoid bacillus A; paratyphoid bacillus B; typhoid bacillus.
3. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; diphtheria toxoid.

State Department of Health, Austin, Tex.—License No. 121:

1. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus).
2. *Bacterial vaccines made from.*—Paratyphoid bacillus A; paratyphoid bacillus B; typhoid bacillus.
3. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; diphtheria toxoid.

Hynson, Westcott and Dunning, Baltimore, Md.—License No. 125:

Snake venom solution.

R. J. Strasenburgh Co., Rochester, N. Y.—License No. 127:

Bee venom ointment.

Research Foundation of Toledo Hospital, Inc., Toledo, Ohio.—License No. 128:

1. *Bacterial antigen made from.*—Colon bacillus.

A. W. Kretschmar, Inc., New York, N. Y.—License No. 132:

Bee venom solution.

Michigan State College, East Lansing, Mich.—License No. 133:

1. *Bacterial antigens made from.*—Brucella melitensis.

Bio-therapeutic Laboratories, East Orange, N. J.—License No. 135:

1. *Bacterial antigens made from.*—Pyocyaneus bacillus; staphylococcus albus; staphylococcus aureus; staphylococcus citreus; streptococcus.

Iowa State Department of Health Serum Center, Des Moines, Iowa.—License No. 137:

1. *Antitoxins, therapeutic serums, and analogous products.*—Serum, measles immune (human); serum, normal human; serum, pertussis immune (human); serum, poliomyelitis immune (human); serum, scarlet fever immune (human).

University of Minnesota Human Serum Laboratory, Minneapolis, Minn.—License No. 138:

1. *Antitoxins, therapeutic serums, and analogous products.*—Serum, measles immune (human); serum, normal human; serum, mumps immune (human); serum, pertussis immune (human); serum, poliomyelitis immune (human); serum, scarlet fever immune (human).

Philadelphia Serum Exchange, The Children's Hospital, Philadelphia, Pa.—License No. 139:

1. *Antitoxins, therapeutic serums, and analogous products.*—Serum, measles immune (human); serum, normal human; serum, mumps immune (human); serum, pertussis immune (human); serum, scarlet fever immune (human).

Hyland Laboratories, Los Angeles, Calif.—License No. 140:

1. *Antitoxins, therapeutic serums, and analogous products.*—Plasma, normal human; serum, chickenpox immune (human); serum, measles immune (human); serum, mumps immune (human); serum, normal human; serum, pertussis immune (human); serum, poliomyelitis immune (human); serum, scarlet fever immune (human).

Venomin Co., Venice, Fla.—License No. 141:
Snake venom.

The Bayer Co., Division of Sterling Drug, Inc., Rensselaer, N. Y.—License No. 142.

1. *Trivalent organic arsenicals.*—Acetylglycarsenobenzene; arsphenamine, silver; dichlorophenarsine hydrochloride: neoarsphenamine; sulfarsphenamine.

Wyeth, Inc., Kimberton and Marietta, Pa.—License No. 144:

1. *Antitoxins, therapeutic serums, and analogous products.*—**Antitoxins:** Diphtheria; dysentery, Shiga; B. odematiens; perfringens; scarlet fever streptococcus; V. septique; tetanus. **Therapeutic serums and analogous products:** Anticolon; antidysenteric; antimeningococcic; antipneumococcic; antistreptococcic. Globulin, immune (human); plasma, normal human; serum, normal horse; serum, pneumococcus typing.
2. *Vaccines made from viruses and rickettsiae.*—Rabies (killed virus); Rocky Mountain spotted fever; smallpox; typhus.
3. *Bacterial vaccines made from.*—Acne bacillus; cholera vibrio; colon bacillus; Friedländer bacillus; gonococcus; influenza bacillus; Neisseria catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; pseudodiphtheria bacillus; staphylococcus albus; staphylococcus aureus; streptococcus; typhoid bacillus.
4. *Tuberculin preparations.*—Tuberculin B. E.; tuberculin B. F.; tuberculin old.
5. *Toxins, toxoids, and venoms.*—Diphtheria toxin for Schick test; scarlet fever streptococcus toxin for Dick test; scarlet fever streptococcus toxin for immunization; diphtheria toxoid; staphylococcus toxoid; tetanus toxoid.
6. *Allergenic extracts and analogous products.*—Allergenic extracts (including pollens and miscellaneous substances); poison ivy extract.

Ben Venue Laboratories, Bedford, Ohio.—License No. 146:
Plasma, normal human; serum, normal human.

Endo Products, Inc., Richmond Hill, N. Y.—License No. 147:
Allergenic extracts (including miscellaneous substances).

The Armour Laboratories, Division of Armour and Co., Fort Worth, Tex.—License No. 149:
Albumin, normal serum; fibrin foam; globulin, immune serum (human); thrombin.

E. S. Miller Laboratories, Los Angeles, Calif.—License No. 150:
Bacterial vaccine made from streptococcus.

LICENSED FOREIGN ESTABLISHMENTS

CANADA

Connaught Antitoxin Laboratory, University of Toronto, Toronto, Canada.—License No. 73:

1. *Antitoxins, therapeutic serums, and analogous products.*—Antitoxins: Diphtheria; staphylococcus; tetanus.
2. *Toxins, toxoids, and venoms.*—Diphtheria toxoid; staphylococcus toxoid; tetanus toxoid.

Ayerst, McKenna and Harrison, Ltd., Rouses Point, N. Y., and Montreal, Canada.—License No. 134:

1. *Antitoxins, therapeutic serums, and analogous products.*—Antipertussis serum.
2. *Bacterial vaccines made from.*—Influenza bacillus; micrococcus catarrhalis; paratyphoid bacillus A; paratyphoid bacillus B; pertussis bacillus; pneumococcus; streptococcus; typhoid bacillus.
3. *Bacterial antigen made from.*—Pertussis bacillus.
4. *Toxins, toxoids, and venoms.*—Staphylococcus toxoid.

ENGLAND

Boots Pure Drug Co., Ltd., Nottingham, England.—License No. 92. Selling agent for the United States, the United Drug Co., 43 Leon Street, Boston, Mass.:

Arsphenamine diglucoside.

Wellcome Physiological Research Laboratories, Beckenham, Kent, England.—License No. 129:

Russell viper venom.

SOUTH AMERICA (BRAZIL)

Laboratorio Brasileiro de Chimiotherapia, Rua General Roca No. 28, Rio de Janeiro, Brazil.—License No. 116. Selling agents for the United States and Hawaii, Ernst Bischoff Co., Inc., Ivoryton, Conn. Selling agents for Puerto Rico, Cesar A. Toro, San Juan, P. R.:

fungus extracts.

SICKNESS ABSENTEEISM AMONG INDUSTRIAL WORKERS, SECOND QUARTER OF 1945, WITH AN INQUIRY INTO THE OCCURRENCE OF DIGESTIVE DISEASES, 1936–45 [1]

By W. M. GAFAFER, *Principal Statistician, United States Public Health Service*

The accompanying data on the frequency of sickness and nonindustrial injuries causing disability for more than one week are derived from analyses of periodic reports from industrial sick benefit associations, group insurance plans, and company relief departments. The group reported upon comprises over 200,000 workers employed in plants located north of the Potomac and east of the Mississippi Rivers.

SECOND QUARTER OF 1945

The morbidity experience of males as shown in table 1 covers the second quarters of 1945 and 1944, the first halves of 1945, 1944, and

TABLE 1.—*Average annual number of absences per 1,000 males on account of sickness and nonindustrial injuries disabling for 8 consecutive calendar days or longer, by cause, experience of* MALE *employees in various industries, second quarter of 1945 compared with second quarter of 1944, and first half of 1945 compared with first halves of the years 1940–44, inclusive* [1]

Cause. (Numbers in parentheses are disease title numbers from international List of Causes of Death, 1939)	Annual number of absences per 1,000 males				
	Second quarter		First half		
	1945	1944	1945	1944	1940–44
Sickness and nonindustrial injuries	130.8	129.5	151.6	151.1	128.1
Nonindustrial injuries (169–195)	11.2	10.4	13.8	11.2	11.4
Sickness	119.6	119.1	137.8	139.9	116.7
Respiratory diseases	45.2	46.0	60.1	70.6	60.6
Tuberculosis of respiratory system (13)	.6	1.0	.6	.8	.7
Influenza, grippe (33)	14.8	14.8	21.3	34.2	27.8
Bronchitis, acute and chronic (106)	8.1	8.7	11.1	10.1	8.8
Pneumonia, all forms (107–109)	5.2	6.1	6.5	8.7	7.7
Diseases of pharynx and tonsils (115b, 115c)	6.4	6.8	6.8	6.6	6.7
Other respiratory diseases (104, 105, 110–114)	10.1	8.6	13.8	10.2	8.9
Digestive diseases	19.5	19.7	20.2	18.5	16.1
Diseases of stomach except cancer (117, 118)	6.9	5.9	7.3	5.9	4.7
Diarrhea and enteritis (120)	2.5	2.7	2.5	2.4	1.6
Appendicitis (121)	4.2	5.2	4.2	4.7	4.9
Hernia (122a)	2.5	2.1	2.5	1.9	1.9
Other digestive diseases (115a, 115d, 116, 122b–129)	3.4	3.8	3.7	3.6	3.0
Nonrespiratory-nondigestive diseases	48.6	47.9	51.4	45.0	36.6
Infectious and parasitic diseases (1–12, 14–24, 26–29, 31, 32, 34–44) [2]	3.1	3.1	3.4	2.7	2.8
Rheumatism, acute and chronic (58, 59)	7.0	6.5	7.1	6.2	4.8
Neurasthenia and the like (part of 84d)	2.5	2.3	2.5	2.1	1.3
Neuralgia, neuritis, sciatica (87b)	3.7	3.3	3.9	3.1	2.6
Other diseases of nervous system (80–85, 87, except part of 84d, and 87b)	2.0	2.1	2.2	1.9	1.4
Diseases of heart and arteries, and nephritis (90–99, 102, 130–132)	8.4	7.4	8.7	7.5	5.4
Other diseases of genitourinary system (133–138)	3.1	3.6	3.3	3.5	2.8
Diseases of skin (151–153)	3.6	4.0	3.7	3.4	2.8
Diseases of organs of movement except diseases of joints (156b)	3.6	4.3	4.0	3.7	3.3
All other diseases (45–57, 60–79, 88, 89, 100, 101, 103, 154, 155, 156a, 157, 162)	11.6	11.3	12.6	10.9	9.4
Ill-defined and unknown causes (200)	6.3	5.5	6.1	5.8	3.4
Average number of males	212,609	246,514	219,897	251,561	1,194,527

[1] Industrial injuries and venereal diseases are not included.
[2] Exclusive of influenza and grippe, respiratory tuberculosis, and venereal diseases.

[1] From the Industrial Hygiene Division, Bureau of State Services. The report for the first quarter appeared in PUBLIC HEALTH REPORTS, 60: 1043-1049 (Sept. 7, 1945).

665426—45——3

the 5 years 1940–44. It will be noted that the average annual number of absences per 1,000 males on account of all sickness and nonindustrial injuries is 130.8 for 1945 as compared with a rate of similar magnitude, 129.5, for the previous year. This similarity of rate extends not only to 1944 but also to 1943 in which year was recorded the highest rate (126.2) of the 10-year period, 1934–43. A relatively high total second-quarter rate has thus been in evidence for 3 years. More notable than differences, where broad and specific causes are concerned, are the similarities between the corresponding second-quarter rates of 1945 and 1944.

FIRST HALF OF 1945

A comparison of corresponding rates for the first halves of 1945 and 1944 reveals a notable decrease in the frequency of influenza and grippe, the relatively high frequency for 1944 reflecting the epidemic prevalent during January of that year. Attention is also directed to the slight increase in the nonrespiratory-nondigestive diseases. The digestive diseases as a group show only a slight increase from 1944 to 1945.

DIGESTIVE DISEASES, FIRST HALVES OF 1936–45

While the digestive disease group presents only a small increase from the first half of 1944 to the first half of 1945, the 1945 rate is relatively high when compared with the average rate, 16.1, for the first halves of the 5 years 1940–44. This raises the question of the behavior of the digestive diseases in a longer period of time, say the 10 years 1936–45. An examination of the appropriate rates reveals a number of notable relationships for the digestive group and for certain specific causes as indicated in table 2.

The average annual number of absences per 1,000 males yielded by the digestive diseases as a group is 15.5 for the 10 years. When the corresponding rates for specific halves are related to the 10-year mean, 1942 is the earliest year to present an excess (4 percent). Excesses are also shown for the subsequent years as follows: 1943, 1 percent; 1944, 19 percent; and 1945, 30 percent. Excesses above the corresponding 10-year mean are also shown by diseases of the stomach except cancer for 1943, 1944, and 1945, the percentage excesses doubling with the passage of the years, and being 13, 28, and 59, respectively. Another digestive cause of interest is diarrhea and enteritis with percentage excesses of 7, 14, 71, and 79, for the 4 years, 1942–45, respectively.

TABLE 2.—*Average annual number of absences per 1,000 males on account of certain digestive diseases disabling for 8 consecutive calendar days or longer in various industries, first halves of 1936–45, inclusive*

Year in first half of which onset of disability occurred	All sickness	Digestive diseases	Diseases of stomach except cancer	Diarrhea and enteritis
	Average annual number of absences per 1,000 males			
1936–45 (mean)	108.4	15.5	4.6	1.4
1936	90.4	14.2	3.9	1.2
1937	106.1	13.7	3.8	1.1
1938	77.6	13.6	4.1	.8
1939	94.7	13.8	3.7	1.1
1940	99.7	15.2	3.9	1.3
1941	104.9	14.5	3.8	1.1
1942	99.1	16.1	4.4	1.5
1943	133.3	15.6	5.2	1.6
1944	139.9	18.5	5.9	2.4
1945	137.8	20.2	7.3	2.5
	Ratio of rate to mean for 1936–45			
1936–45 (mean)	1.00	1.00	1.00	1.00
1936	.83	.92	.85	.86
1937	.98	.88	.83	.79
1938	.72	.88	.89	.57
1939	.87	.89	.80	.79
1940	.92	.98	.85	.93
1941	.97	.94	.83	.79
1942	.91	1.04	.96	1.07
1943	1.23	1.01	1.13	1.14
1944	1.29	1.19	1.28	1.71
1945	1.27	1.30	1.59	1.79

COMMENT

The persistence of relatively high sickness absenteeism rates over over the past 3 or 4 years undoubtedly indicates the precipitation of a number of factors by the extraordinary demands on the productive capacities of industry. These demands introduced multitudinous changes in the working, home, and community conditions. Because of the reduction in available manpower, industry found it necessary to employ youth, the older worker, the long unemployed, the inexperienced, and many persons excluded from the armed forces for some reason or other. Reference is also made to emotional strains and personal mental conflicts, the lowered physical standards for employment, overtime with its attendant fatigue, and night work.

PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES

August 12–September 8, 1945

The accompanying table (table 1) summarizes the prevalence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State

for each week are published in the PUBLIC HEALTH REPORTS under the section "Prevalence of disease." The table gives the number of cases of these diseases for the 4 weeks ended September 8, 1945, the number reported for the corresponding period in 1944, and the median number for the years 1940–44.

TABLE 1.—*Number of reported cases of 9 communicable diseases in the United States during the 4-week period August 12–September 8, 1945, the number for the corresponding period in 1944, and the median number of cases reported for the corresponding period, 1940–44*

Geographic section	Current period	1944	5-year median	Current period	1944	5-year median	Current period	1944	5-year median
	Diphtheria			Influenza [1]			Measles [2]		
United States	1,221	871	951	3,070	2,209	2,209	2,422	2,533	3,149
New England	11	21	13	54	11	4	212	228	349
Middle Atlantic	74	38	56	12	21	21	245	346	809
East North Central	81	95	95	66	74	89	612	481	631
West North Central	101	51	80	23	29	35	84	109	184
South Atlantic	373	204	265	945	628	816	73	329	329
East South Central	222	158	152	94	41	69	40	42	115
West South Central	237	171	150	1,730	1,180	986	173	168	168
Mountain	38	60	48	105	159	159	296	94	207
Pacific	84	73	48	41	66	71	687	736	452
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States	299	537	187	3,436	5,967	2,376	3,356	2,746	2,740
New England	12	36	16	222	267	110	242	231	231
Middle Atlantic	65	166	55	1,107	3,013	258	539	392	423
East North Central	73	93	19	709	1,062	907	757	621	652
West North Central	17	39	17	267	360	360	305	222	265
South Atlantic	33	54	42	313	801	236	527	449	367
East South Central	29	48	15	153	214	90	229	162	194
West South Central	29	27	11	277	58	58	220	126	113
Mountain	10	10	4	166	55	55	98	138	116
Pacific	31	64	13	222	137	137	439	405	223
	Smallpox			Typhoid and paratyphoid fever			Whooping cough [2]		
United States	10	10	16	671	675	887	8,711	6,984	11,056
New England	0	0	0	[3] 60	34	35	712	580	690
Middle Atlantic	0	0	0	93	97	130	2,494	1,088	2,228
East North Central	5	0	7	52	75	102	1,865	1,719	3,260
West North Central	3	3	4	33	49	59	334	543	543
South Atlantic	1	3	2	130	120	188	1,173	1,189	1,297
East South Central	1	3	2	116	72	142	281	307	408
West South Central	0	0	1	114	178	178	725	742	692
Mountain	0	0	0	43	31	40	361	475	475
Pacific	0	1	1	30	19	30	766	341	871

[1] Mississippi and New York excluded; New York City included.
[2] Mississippi excluded.
[3] Includes 37 cases reported as *Salmonella* infection in 1 hospital in Massachusetts.

DISEASES ABOVE MEDIAN PREVALENCE

Poliomyelitis.—The number of cases of poliomyelitis rose from 1,907 during the 4 weeks ended August 11 to 3,436 during the 4 weeks ended September 8. The current incidence was less than 60 percent of the 1944 figure (5,967 cases) for this period, but it was 1.4 times the 1940–44 median (2,376 cases). Each section of the country except the East North Central and West North Central sections reported an increase

over the normal seasonal expectancy. In the West South Central section the number of cases (277) was 4.8 times the median and in the Middle Atlantic section the number (1,107 cases) was 4.3 times the normal seasonal incidence. Other sections reported minor increases ranging from 1.6 times the median in the Pacific region to 3 times the median in the Mountain region. States reporting more than 100 cases for the 4-week period were: New York 553, Illinois 423, New Jersey 316, Pennsylvania 238, Texas 191, Massachusetts 121, Tennessee 113, California 112, Ohio 111, and Virginia 107 cases—about 70 percent of the total cases occurred in these 10 States.

Table 2 shows the total reported cases since the beginning of the year and the incidence by weeks since the first of July, with corresponding data for 1944 and 1943. While the current rise of this disease first appeared in the West South Central section and spread rapidly into the Atlantic Coast region, practically every section of the country has felt its effect. In recent years the peak of this disease has generally

TABLE 2.—*Number of cases of poliomyelitis reported in each geographic area during 1945, 1944, and 1943* [1]

Division	Total January 1–September 15	Week ended—										
		July				August				September		
		7	14	21	28	4	11	18	25	1	8	15
All regions:												
1945	7,982	154	253	369	391	476	671	692	931	917	896	965
1944	12,458	290	462	568	738	932	1,015	1,260	1,529	1,680	1,498	1,440
1943	7,812	245	297	329	361	450	545	747	872	956	906	1,020
New England:												
1945	497	11	8	26	34	33	53	38	62	63	59	69
1944	446	4	8	9	12	36	37	54	74	75	64	49
1943	485	1	6	3	11	32	36	62	62	77	73	91
Middle Atlantic:												
1945	2,421	31	56	95	120	196	227	232	344	295	236	330
1944	5,361	62	125	216	304	413	449	601	756	895	761	674
1943	506	6	14	12	13	20	38	46	57	72	73	91
East North Central:												
1945	1,213	10	17	19	27	51	113	121	189	177	222	160
1944	2,043	21	58	63	111	143	178	215	271	321	255	329
1943	1,424	8	4	12	21	46	79	144	241	249	273	288
West North Central:												
1945	517	5	7	14	8	15	29	33	49	97	88	122
1944	627	9	8	25	22	28	54	67	104	77	112	76
1943	1,023	9	15	12	40	61	117	118	131	183	138	148
South Atlantic:												
1945	869	23	42	68	55	46	78	76	86	80	70	60
1944	2,094	123	126	128	136	167	167	195	214	205	187	169
1943	153	1	6	9	7	5	8	7	10	8	10	23
East South Central:												
1945	493	25	35	26	42	28	35	47	37	30	39	23
1944	857	37	91	90	101	84	67	53	56	48	57	59
1943	183	6	5	6	14	11	5	29	20	14	12	7
West South Central:												
1945	1,043	30	56	78	58	58	78	79	86	60	52	75
1944	376	17	26	18	22	27	23	16	11	14	17	15
1943	1,605	137	148	148	141	122	119	104	117	81	90	89
Mountain:												
1945	334	1	3	13	16	18	29	17	35	55	59	54
1944	135	6	2	1	4	4	9	12	16	12	15	18
1943	556	2	9	11	4	29	23	43	47	123	93	92
Pacific:												
1945	595	18	29	30	31	31	29	49	43	60	70	72
1944	518	11	18	18	26	30	31	47	27	33	30	51
1943	1,877	75	90	116	110	124	120	194	187	149	144	191

[1] A similar table with earlier data appeared in PUBLIC HEALTH REPORTS of Sept. 7, 1945, p. 1055.

been reached during the latter part of September. Reports indicated that the peak might have been reached during the week ended August 25, when 931 cases were reported, followed by 2 weeks of declining incidence, 917 and 896 cases, respectively. However, later reports (week ended September 15) show a sharp increase over the preceding week in the number of cases in some States in the New England, Middle Atlantic, West North Central, and West South Central sections. The New England, West North Central, and Pacific sections reported the highest weekly incidence in these sections during the week ended September 15.

Diphtheria.—The number of cases of diphtheria rose from 950 during the preceding 4-week period to 1,221 during the 4 weeks ended September 8. The number was 1.4 times that reported for the corresponding period in 1944 and 1.3 times the 1940–44 median. For the country as a whole the current incidence is the highest reported for this period since 1939 when 1,446 cases occurred. Six of the geographic regions reported increases over the 1944 incidence as well as over the 1940–44 median. In the New England section the number of cases was about normal, the East North Central section reported a 15-percent decrease from the 5-year median and the Mountain section reported a 20-percent decline.

Influenza.—The incidence of influenza was somewhat above normal for this season of the year, the number of cases (3,070) reported for the current 4 weeks being 1.4 times the 1940–44 median. The New England, South Atlantic, East South Central, and West South Central sections reported excesses over the median, but in the other 5 sections the incidence was relatively low. Eighty percent of the total cases occurred in 4 States, viz, Texas (1,461) cases, South Carolina (521), Virginia (403), and Louisiana (162). While the number of cases is not large it represents the highest incidence for this period in the 17 years for which these data are available.

Meningococcus meningitis.—For the 4 weeks ended September 8 there were 299 cases of meningococcus meningitis reported, as compared with 537 for the corresponding period in 1944 and a 1940–44 median of 187 cases. In the West South Central and Mountain sections the incidence was about the same as in 1944, but all other sections reported fewer cases than occurred during this period in that year. Compared with the 1940–44 median the number of cases was lower in the New England and South Atlantic sections, the same as the median in the West North Central sections, and higher in the other 6 sections.

Scarlet fever.—There were 3,356 cases of scarlet fever reported for the 4 weeks ended September 8. The 1940–44 median for the corresponding period was 2,740 cases. Each geographic section except the

Mountain reported an increase over the normal seasonal expectancy. For the country as a whole the current incidence is the highest since 1937 when 3,450 cases were reported for the corresponding 4-week period.

DISEASES BELOW MEDIAN PREVALENCE

Measles.—For the 4 weeks ended September 8 there were 2,422 cases of measles reported. The number was slightly below the 1944 figure (2,533 cases) for the corresponding 4 weeks and about 20 percent below the 1940–44 median. The incidence was somewhat above the seasonal expectancy in the Mountain and Pacific sections, about normal in the East North Central and West South Central sections, and considerably below the normal seasonal incidence in all other sections. For the country as a whole the number of cases was the lowest for this period since 1939 when 1,857 cases were reported for these same weeks.

Smallpox.—The number of cases (10) of smallpox reported for the current 4-week period was the same as occurred during the corresponding 4 weeks in 1944. The distribution of cases was, however, slightly different and wherever cases occurred the number was lower than the preceding 5-year median.

Typhoid fever.—The number of cases (671) of this disease was about on a level with the number reported for the corresponding period in 1944, but it was only about 75 percent of the 1940–44 median. The situation was favorable in almost all sections of the country, the incidence either closely approximating the preceding 5-year median or falling considerably below it.

Whooping cough.—For the 4 weeks ended September 8 there were 8,711 cases of whooping cough reported, as compared with 6,984 for the corresponding period in 1944, and a 1940–44 median of approximately 11,000 cases. A few more cases than might normally be expected occurred in the New England, Middle Atlantic, and West South Central sections, but in all other sections the numbers of cases were relatively low.

MORTALITY, ALL CAUSES

For the 4 weeks ended September 8 there were 32,867 deaths from all causes reported by 93 large cities to the Bureau of the Census. The average number reported for the corresponding weeks in 1942–44 was 30,905. For the first week of the period the number of deaths in 1945 was 4.5 percent less than the preceding 3-year average, but the number during each of the other 3 weeks was larger than the average, the increases being 12.6 percent in the first week, 10.3 percent in the third week, and 7.5 percent during the last week of the 4-week period.

OCCUPATIONAL DERMATOSES ABSTRACTS[1]

A Review

Abstracts from the literature on occupational and related dermatoses covering the period January 1940 through June 1943 are contained in Public Health Bulletin No. 284.

The pamphlet contains 179 pages, and comprises materials from many languages. It includes, in alphabetically arranged listing, articles relating to most forms of occupational dermatoses and to a wide variety of causative factors. Extensive sections are devoted to carcinoma, chemicals, cleansers, cosmetics, drug eruptions (including studies on effects of sulfonamides), industrial dermatoses, metals, plants and woods, resins and waxes, textiles, and conditions associated with production and use of military materials such as war chemicals, explosives, and gases. Prevention and sensitivity are covered. Studies in newer burn therapy are included.

This volume is a continuation of Public Health Bulletin No. 266, which contains abstracts from the literature on occupational and related dermatoses from 1935 through 1939. It was prepared by the Dermatoses Section of the Industrial Hygiene Division, Bureau of State Services of the United States Public Health Service, as part of its routine activity.

DEATHS DURING WEEK ENDED SEPTEMBER 8, 1945

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Sept. 8, 1945	Corresponding week, 1944
Data for 93 large cities of the United States:		
Total deaths	8,120	7,673
Average for 3 prior years	7,550	
Total deaths, first 36 weeks of year	325,105	327,682
Deaths under 1 year of age	619	618
Average for 3 prior years	598	
Deaths under 1 year of age, first 36 weeks of year	21,830	22,306
Data from industrial insurance companies:		
Policies in force	67,331,795	66,723,057
Number of death claims	9,486	9,601
Death claims per 1,000 policies in force, annual rate	7.3	7.5
Death claims per 1,000 policies, first 36 weeks of year, annual rate	10.3	10.1

[1] Occupational and related dermatoses. Abstracts from the literature January 1940 to June 1943, inclusive. By Louis Schwartz and Norman R. Goldsmith. Pub. Health Bull. No. 284. Government Printing Office, 1944. For sale by the Superintendent of Documents, Washington 25, D. C. Price 25 cents.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED SEPTEMBER 15, 1945

Summary

Following declines in the past 2 weeks, the incidence of poliomyelitis for the country as a whole again increased—963 cases as compared with 891 for the preceding week, 917 for the week ended September 1, and 931 for the week of August 25, the last figure being the previous weekly high. Declines were reported currently in the East Central, South Atlantic, and Mountain areas.

An aggregate increase of 250 cases occurred in 15 of the 23 States reporting 10 or more cases each, while a decline of 122 cases occurred in the remaining 8 States. A decline of 20 cases was also reported in one other State (Indiana—from 28 to 8). States reporting more than 16 cases each are as follows (last week's figures in parentheses): *Increases*—Massachusetts 45 (30), New York 148 (114), New Jersey 87 (60), Pennsylvania 95 (62), Wisconsin 39 (19), Minnesota 25 (17), Iowa 46 (9), Nebraska 18 (7), Oklahoma 20 (10), Texas 44 (30), California 46 (30); *decreases*—Ohio 30 (33), Illinois 66 (131), Missouri 24 (36), Virginia 19 (30), Utah 22 (23), Washington 25 (33).

A total of 93 cases of meningococcus meningitis was reported as compared with 73 last week and 59 for the next earlier week, which was the lowest weekly incidence recorded so far this year. The total to date is 6,494, as compared with 13,607 for the corresponding period last year, 14,153 for the same period in 1943, and a 5-year median of 2,584.

Of the total of 69 cases of infectious encephalitis, 51 occurred in California, where 161 of the 244 cases reported since the first of July have occurred.

For the current week a total of 8,173 deaths was recorded in 91 large cities of the United States, as compared with 8,068 last week, 7,737 for the corresponding week last year, and a 3-year (1942–44) average of 7,818. The total to date for these cities is 330,517, as compared with 332,323 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended September 15, 1945, and comparison with corresponding week of 1944 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	Sept. 15, 1945	Sept. 16, 1944		Sept. 15, 1945	Sept. 16, 1944		Sept. 15, 1945	Sept. 16, 1944		Sept. 15, 1945	Sept. 16, 1944	
NEW ENGLAND												
Maine	1	0	0	------	------	------	2	0	5	1	0	1
New Hampshire	0	0	0	------	------	------	1	2	0	0	0	0
Vermont	2	0	0	------	------	------	6	0	1	0	1	0
Massachusetts	1	6	2	------	------	------	40	18	31	1	3	3
Rhode Island	0	0	0	11	------	------	3	0	3	0	2	0
Connecticut	0	0	0	1	------	1	0	5	5	1	3	1
MIDDLE ATLANTIC												
New York	10	15	7	[1] 1	(1)	------	23	21	70	9	13	8
New Jersey	4	2	2	1	------	4	18	8	21	2	3	2
Pennsylvania	3	8	7	1	------	------	43	26	26	8	11	3
EAST NORTH CENTRAL												
Ohio	6	11	5	2	2	4	2	5	13	1	6	3
Indiana	5	5	3	------	7	4	5	4	4	2	3	1
Illinois	0	3	13	2	1	1	42	14	15	8	9	3
Michigan [2]	16	9	4	2	1	2	43	9	44	4	9	1
Wisconsin	1	0	0	17	10	16	19	30	61	1	4	1
WEST NORTH CENTRAL												
Minnesota	4	5	4	------	------	------	2	4	4	1	1	0
Iowa	3	0	2	------	------	1	1	2	4	2	0	0
Missouri	4	3	3	1	2	------	4	3	2	4	4	1
North Dakota	2	1	1	------	3	------	1	0	0	0	0	0
South Dakota	7	6	2	------	------	------	2	2	1	3	0	0
Nebraska	4	2	2	------	2	------	0	1	1	0	0	0
Kansas	6	2	3	------	------	1	6	7	5	3	1	1
SOUTH ATLANTIC												
Delaware	0	0	0	------	------	------	0	0	1	0	0	0
Maryland [2]	7	1	1	------	------	------	1	3	5	0	0	0
District of Columbia	0	0	1	------	------	------	2	0	1	0	0	0
Virginia	18	4	7	123	55	66	1	4	10	3	4	1
West Virginia	14	8	6	------	------	1	0	2	3	4	1	2
North Carolina	53	13	40	------	------	------	1	5	7	0	1	1
South Carolina	17	9	19	89	129	129	12	6	6	1	3	1
Georgia	33	13	21	6	3	7	3	4	1	1	1	0
Florida	5	4	3	1	1	2	1	5	4	1	1	0
EAST SOUTH CENTRAL												
Kentucky	15	8	8	------	1	1	5	0	3	1	0	0
Tennessee	31	6	10	2	5	6	3	2	10	3	2	2
Alabama	30	34	19	28	8	8	0	1	2	1	1	1
Mississippi [2]	18	14	12	------	------	------	------	------	------	2	0	0
WEST SOUTH CENTRAL												
Arkansas	13	4	11	15	24	5	0	3	4	1	1	0
Louisiana	13	6	6	11	2	2	0	0	0	2	0	0
Oklahoma	5	9	8	20	------	8	2	1	1	0	0	0
Texas	54	43	26	517	259	254	31	18	22	8	2	1
MOUNTAIN												
Montana	0	8	0	16	2	------	6	2	3	0	1	0
Idaho	2	0	0	------	5	------	20	0	0	1	0	0
Wyoming	0	0	0	1	------	------	1	1	1	0	0	0
Colorado	4	4	4	2	6	6	7	1	4	0	2	0
New Mexico	2	2	2	------	3	1	1	1	1	0	0	0
Arizona	2	1	1	15	24	34	0	0	3	0	2	1
Utah [2]	0	0	0	25	------	------	20	8	6	0	0	0
Nevada	0	1	0	------	------	------	0	23	0	0	0	0
PACIFIC												
Washington	2	8	3	------	------	------	66	15	13	3	4	1
Oregon	5	2	2	3	1	6	14	11	15	1	3	0
California	24	21	16	10	8	14	101	88	49	9	24	5
Total	446	301	302	923	564	601	561	365	561	93	126	43
37 weeks	9,750	7,752	8,541	74,222	340,887	170,891	103,585	593,079	540,807	6,494	13,607	2,584

[1] New York City only.
[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended September 15, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever[2]		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	Sept. 15, 1945	Sept. 16, 1944		Sept. 15, 1945	Sept. 16, 1944		Sept. 15, 945	Sept. 16, 1944		Sept. 15, 1945	Sept. 16, 1944	
NEW ENGLAND												
Maine	8	1	1	8	13	8	0	0	0	2	0	0
New Hampshire	1	6	0	2	1	1	0	0	0	0	0	0
Vermont	0	2	2	2	4	3	0	0	0	0	0	1
Massachusetts	45	28	16	42	57	59	0	0	0	1	6	6
Rhode Island	0	0	1	3	0	2	0	0	0	1	1	1
Connecticut	15	12	12	12	5	11	0	0	0	3	3	1
MIDDLE ATLANTIC												
New York	148	497	65	87	81	78	0	0	0	6	7	9
New Jersey	87	54	20	25	16	21	0	0	0	6	3	4
Pennsylvania	95	123	18	67	57	57	0	0	0	7	9	20
EAST NORTH CENTRAL												
Ohio	30	118	35	67	50	52	0	1	0	7	7	7
Indiana	8	24	13	15	23	21	0	0	0	6	3	2
Illinois	66	44	52	50	49	49	0	0	0	2	0	9
Michigan[3]	16	112	29	44	38	39	0	0	0	2	3	3
Wisconsin	39	31	18	23	29	37	0	0	0	0	1	1
WEST NORTH CENTRAL												
Minnesota	25	40	10	20	22	16	0	0	0	1	0	1
Iowa	46	13	13	13	10	16	0	0	0	2	0	1
Missouri	24	4	4	14	19	18	0	0	0	1	5	5
North Dakota	1	5	2	4	5	4	0	0	0	0	0	0
South Dakota	0	1	1	2	0	4	0	0	0	0	1	0
Nebraska	18	4	11	12	6	7	0	0	0	0	0	0
Kansas	8	9	10	19	18	32	0	0	0	3	6	4
SOUTH ATLANTIC												
Delaware	1	6	0	1	0	4	0	0	0	0	0	0
Maryland[2]	8	54	2	23	16	16	0	0	0	1	5	4
District of Columbia	5	16	2	4	3	4	0	0	0	0	0	1
Virginia	19	46	11	32	24	24	1	1	0	6	3	8
West Virginia	3	10	1	54	48	28	0	0	0	9	6	6
North Carolina	5	28	9	59	34	40	0	0	0	5	3	7
South Carolina	5	0	2	12	4	8	0	0	0	1	6	6
Georgia	2	5	4	13	15	15	0	0	0	7	6	8
Florida	11	4	4	7	4	4	0	0	0	2	1	1
EAST SOUTH CENTRAL												
Kentucky	2	40	14	18	18	25	0	0	0	8	6	13
Tennessee	15	11	4	21	34	28	0	1	1	63	9	10
Alabama	3	5	1	15	23	23	0	0	0	9	4	5
Mississippi[2]	3	3	3	12	11	11	0	0	0	3	8	8
WEST SOUTH CENTRAL												
Arkansas	5	1	2	7	6	4	1	0	0	9	11	11
Louisiana	6	2	2	7	5	2	0	0	0	4	6	12
Oklahoma	29	2	2	10	3	6	0	0	0	6	2	5
Texas	44	10	8	51	10	16	0	0	0	15	13	28
MOUNTAIN												
Montana	10	3	3	1	9	9	0	0	0	0	0	0
Idaho	2	1	1	2	1	3	0	1	0	1	0	0
Wyoming	1	0	0	3	2	1	0	0	0	0	0	0
Colorado	16	7	6	7	12	13	0	0	0	1	1	4
New Mexico	2	2	2	13	3	2	0	0	0	2	2	3
Arizona	1	2	0	0	3	1	0	0	0	1	0	1
Utah[2]	22	2	3	5	6	6	0	0	0	0	0	0
Nevada	0	1	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	25	14	12	9	13	12	0	0	0	0	2	1
Oregon	1	12	6	9	15	8	0	0	0	1	0	2
California	46	25	14	97	68	55	0	0	0	4	13	10
Total	963	1,440	797	1,023	893	893	2	3	9	208	162	219
37 weeks	8,010	12,412	5,204	138,197	150,581	101,240	277	314	634	3,504	3,924	4,919

[2] Period ended earlier than Saturday.

[3] Including paratyphoid fever reported separately, as follows: Rhode Island 1; New York 2; New Jersey 2; Ohio 2; North Carolina 1; Georgia 3; Oklahoma 1; Texas 3; California 1.

Telegraphic morbidity reports from State health officers for the week ended September 15, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Whooping cough			Week ended Sept. 15, 1945							
	Week ended—		Median 1940–44	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Sept. 15, 1945	Sept. 16, 1944		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	32	16	24	0	0	0	0	0	0	0	3
New Hampshire	0	3	2	0	0	0	0	0	0	0	0
Vermont	22	23	15	0	0	0	0	0	0	0	0
Massachusetts	[6] 170	86	130	0	3	0	0	0	0	0	1
Rhode Island	13	8	23	0	2	0	0	0	0	0	1
Connecticut	36	36	36	0	0	0	1	0	0	0	0
MIDDLE ATLANTIC											
New York	403	168	255	6	30	0	3	0	0	1	5
New Jersey	201	70	150	1	0	2	0	0	0	0	2
Pennsylvania	185	99	216	0	0	0	0	0	1	0	3
EAST NORTH CENTRAL											
Ohio	107	122	147	0	0	0	1	0	0	0	0
Indiana	20	10	25	1	1	2	2	0	0	0	1
Illinois	117	104	139	4	0	0	0	0	0	0	11
Michigan [2]	172	114	256	0	1	0	0	0	0	0	1
Wisconsin	61	126	204	0	0	0	0	0	1	0	9
WEST NORTH CENTRAL											
Minnesota	20	37	55	1	0	0	0	0	0	0	4
Iowa	9	7	11	0	0	0	3	0	0	0	9
Missouri	17	10	18	0	0	0	0	0	0	0	0
North Dakota	4	10	5	0	0	0	0	0	0	0	0
South Dakota	5	13	11	0	0	0	0	0	0	0	0
Nebraska	0	1	2	0	0	0	0	0	0	0	0
Kansas	38	23	33	1	0	0	2	0	0	0	12
SOUTH ATLANTIC											
Delaware	3	3	2	0	0	0	0	0	0	0	0
Maryland [2]	42	66	65	0	0	9	0	1	0	0	1
District of Columbia	6	2	14	0	0	0	0	0	0	0	0
Virginia	48	22	47	0	0	338	0	2	0	0	1
West Virginia	5	18	31	0	0	0	0	0	0	0	0
North Carolina	73	73	77	0	0	0	0	4	0	1	0
South Carolina	84	65	65	2	26	0	0	0	1	8	0
Georgia	19	17	9	0	3	1	0	0	0	47	5
Florida	5	2	5	1	0	0	0	0	1	8	0
EAST SOUTH CENTRAL											
Kentucky	18	40	63	0	2	0	0	0	0	0	0
Tennessee	22	36	36	1	0	0	1	0	3	2	2
Alabama	20	22	22	2	0	0	0	0	0	28	1
Mississippi [2]				0	0	0	0	0	1	19	11
WEST SOUTH CENTRAL											
Arkansas	4	28	18	3	20	0	0	0	1	0	0
Louisiana	7	2	2	0	30	0	0	1	1	14	0
Oklahoma	17	1	6	0	7	2	3	1	0	0	0
Texas	135	86	96	9	613	15	0	0	0	45	11
MOUNTAIN											
Montana	1	38	34	0	0	0	0	0	0	0	0
Idaho	10	1	4	0	0	0	0	0	0	0	0
Wyoming	3	5	13	0	0	0	0	1	2	0	1
Colorado	38	62	17	0	0	0	2	0	0	0	0
New Mexico	8	4	6	1	6	0	0	0	0	0	0
Arizona	3	10	10	0	0	22	0	0	0	0	0
Utah [2]	4	4	22	0	0	0	0	0	2	0	0
Nevada	0	1	1	0	0	0	0	0	0	0	0
PACIFIC											
Washington	27	36	53	0	0	0	0	0	0	0	2
Oregon	15	13	15	0	0	0	0	0	0	0	4
California	114	106	187	4	4	0	51	0	0	1	3
Total	2,363	1,849	2,772	37	748	391	69	10	14	174	104
Same week 1944	1,849			36	474	295	13	9	11	179	75
Average, 1942–44	2,541			36	378	229	20	[5] 11	10	[5] 136	
37 weeks: 1945	[6] 93,369			1,353	18,768	7,945	424	414	564	[6] 3,356	3,434
1944	70,150			1,245	16,095	6,321	472	416	419	3,441	2,597
Average, 1942–44	115,612		[5] 133,994	1,200	11,549	5,747	466	[5] 416	586	[5] 2,365	

[2] Period ended earlier than Saturday.
[5] 5-year median, 1940–44.
[6] Delayed reports: Typhus fever, week ended Sept. 1, Arkansas 1 case (instead of 0); whooping cough, week ended Sept. 8, Massachusetts 146 cases (instead of 0).

Leprosy: California 1 case.

WEEKLY REPORTS FROM CITIES

City reports for week ended September 8, 1945

This table lists the reports from 88 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	0	1	0	2	4	0	0	3
New Hampshire:												
Concord	0	0	------	0	0	0	2	0	1	0	0	0
Vermont:												
Barre	0	0	------	0	0	0	0	0	0	0	0	0
Massachusetts:												
Boston	2	0	------	0	2	0	6	22	9	0	0	24
Fall River	0	0	------	0	0	0	0	0	3	0	0	0
Springfield	0	0	------	0	0	0	0	1	1	0	0	6
Worcester	0	0	------	0	5	0	3	2	0	0	0	8
Rhode Island:												
Providence	0	0	1	0	0	1	3	0	0	0	0	19
Connecticut:												
Bridgeport	0	0	------	0	0	0	0	0	1	0	0	0
Hartford	0	0	------	0	1	0	1	2	0	0	0	3
New Haven	0	0	------	0	0	0	0	1	0	0	0	10
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	1	0	1	4	4	0	0	7
New York	8	1	2	1	1	3	53	47	18	0	7	107
Rochester	0	0	------	0	1	1	1	11	0	0	1	10
Syracuse	0	0	------	0	0	0	3	0	6	0	0	28
New Jersey:												
Camden	0	0	------	0	2	0	0	2	0	0	0	5
Newark	0	0	1	0	0	1	3	1	4	0	0	17
Trenton	0	0	------	0	0	1	1	2	0	0	0	2
Pennsylvania:												
Philadelphia	0	0	1	1	18	2	14	18	6	0	1	58
Pittsburgh	1	0	------	1	0	2	5	8	6	0	1	9
Reading	0	0	------	0	1	0	2	0	1	0	0	1
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	------	2	0	0	7	2	1	0	0	8
Cleveland	0	0	2	0	0	1	3	4	7	0	0	37
Columbus	0	0	------	0	0	0	3	1	3	0	0	1
Indiana:												
Fort Wayne	0	0	------	0	2	1	0	0	0	0	0	0
Indianapolis	2	0	------	0	0	0	3	1	2	0	0	7
South Bend	0	0	------	0	2	0	0	0	0	0	0	0
Terre Haute	0	0	------	0	0	0	0	0	0	0	1	1
Illinois:												
Chicago	0	0	2	1	17	1	21	17	15	0	0	53
Springfield	0	0	------	0	0	0	2	0	0	0	0	5
Michigan:												
Detroit	10	0	------	0	14	2	9	2	10	0	0	102
Flint	0	0	------	0	0	0	1	0	1	0	0	1
Grand Rapids	0	0	------	0	0	0	0	0	1	0	0	0
Wisconsin:												
Kenosha	0	0	------	0	0	0	0	0	0	0	0	2
Milwaukee	0	0	------	0	3	0	0	10	10	0	0	4
Racine	0	0	------	0	0	0	0	0	1	0	0	0
Superior	0	0	------	0	1	0	1	0	0	0	0	3
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	1	0	0	5	0	0	0	0
Minneapolis	0	0	------	0	1	0	5	6	6	0	0	13
Missouri:												
Kansas City	0	0	------	1	3	0	6	0	1	0	0	1
St. Joseph	0	0	------	0	0	0	0	0	1	0	0	0
St. Louis	0	0	------	0	1	0	6	7	6	0	1	4

City reports for week ended September 8, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo	3	0	------	0	0	0	0	2	0	0	0	2
Nebraska:												
Omaha	0	0	------	0	2	0	6	4	0	0	0	0
Kansas:												
Topeka	0	0	------	0	0	0	1	0	0	0	0	4
Wichita	0	0	------	0	0	0	3	0	1	0	0	7
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	0	0	3	0	1	0	0	0
Maryland:												
Baltimore	11	0	1	1	5	0	5	0	7	0	0	27
Cumberland	0	0	------	0	0	0	0	0	0	0	0	0
Frederick	0	0	------	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	0	------	0	0	0	2	4	3	0	0	7
Virginia:												
Lynchburg	0	0	------	0	0	0	1	1	1	0	0	6
Richmond	0	0	------	0	0	0	0	20	7	0	1	2
Roanoke	0	0	------	0	0	0	0	0	0	6	0	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	0	0	0	0
Wheeling	0	0	------	0	0	1	0	0	1	0	1	0
North Carolina:												
Raleigh	0	0	------	0	0	0	2	0	0	0	0	0
Wilmington	1	0	------	0	0	0	0	0	1	0	0	6
Winston-Salem	0	0	------	0	0	0	0	0	4	0	0	4
South Carolina:												
Charleston	1	0	------	0	0	0	0	1	1	0	0	0
Georgia:												
Atlanta	3	0	------	0	0	0	3	0	3	0	0	0
Savannah	0	0	------	0	0	1	0	0	0	0	0	0
Florida:												
Tampa	3	0	------	0	0	0	7	0	2	0	0	0
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	0	0	2	4	4	0	1	5
Nashville	0	0	------	0	0	0	1	1	1	0	0	0
Alabama:												
Birmingham	0	0	1	0	0	0	3	0	0	0	0	1
Mobile	1	0	------	0	0	1	1	0	0	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	0	0	1	0	0	0	0	0
Louisiana:												
New Orleans	1	0	1	0	0	1	13	6	3	0	0	3
Shreveport	2	0	------	0	0	0	3	3	0	0	0	0
Texas:												
Dallas	1	0	------	0	2	0	4	1	1	0	0	0
Galveston	0	0	------	0	0	0	1	0	0	0	0	0
Houston	3	0	------	0	0	0	0	2	3	0	1	0
San Antonio	2	0	------	0	1	0	1	1	2	0	0	3
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	0	1	0	0	1	0
Great Falls	0	0	------	0	0	0	0	0	0	0	0	0
Helena	0	0	------	0	0	0	0	0	0	0	0	0
Missoula	0	0	------	0	0	0	0	0	0	0	0	0
Idaho:												
Boise	0	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	0	0	1	0	0	0	6	9	3	0	0	12
Pueblo	0	0	------	0	0	0	0	1	0	0	0	6
Utah:												
Salt Lake City	0	0	------	0	3	0	1	3	1	0	0	2

City reports for week ended September 8, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	3	0	------	0	6	0	5	3	1	0	0	10
Spokane	0	0	1	0	0	0	1	0	0	0	0	1
Tacoma	0	0	------	0	13	0	2	0	0	0	0	1
California:												
Los Angeles	3	0	9	0	6	1	1	8	17	0	0	24
Sacramento	0	0	------	0	4	0	0	0	2	0	0	7
San Francisco	1	0	------	0	11	0	7	3	5	0	1	8
Total	62	1	23	8	130	22	251	256	204	0	18	707
Corresponding week, 1944	47	------	16	2	101	------	191	------	196	0	38	485
Average, 1940–44	48	------	29	[1] 8	[2] 154	------	[1] 216	------	225	0	38	923

[1] 3-year average, 1940–42.
[2] 5-year median, 1940–44.

Dysentery, amebic.—Cases: New York 2; Chicago 2; St. Joseph 1.
Dysentery, bacillary.—Cases: New York 6; Chicago 1; St Louis 1; Charleston, S. C., 7; Nashville 1.
Dysentery, unspecified.—Cases: Baltimore 2; Richmond 4; San Antonio 5.
Typhus fever, endemic.—Cases: Charleston, S. C., 1; Atlanta 1; Savannah 4; Birmingham 2; Mobile 1; New Orleans 5; Dallas 1; Houston 2; San Antonio 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,086,900)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	5.2	0.0	2.6	0.0	21	5.2	39.2	78.4	50	0.0	0.0	191
Middle Atlantic	4.2	0.5	1.9	1.4	11	4.6	38.4	43.0	21	0.0	4.6	113
East North Central	7.3	0.0	2.4	1.8	24	3.0	30.4	22.5	31	0.0	0.6	136
West North Central	6.7	0.0	0.0	2.2	18	0.0	60.1	53.4	33	0.0	2.2	69
South Atlantic	31.3	0.0	1.6	1.6	8	3.3	37.9	42.9	51	0.0	3.3	86
East South Central	5.9	0.0	5.9	0.0	0	5.9	41.3	29.5	30	0.0	5.9	35
West South Central	25.8	0.0	2.9	0.0	9	2.9	66.0	37.3	26	0.0	2.9	17
Mountain	0.0	0.0	7.9	0.0	24	0.0	55.6	111.2	32	0.0	7.9	159
Pacific	11.1	0.0	15.8	0.0	63	1.6	25.3	22.1	40	0.0	1.6	81
Total	9.5	0.2	3.5	1.2	20	3.4	38.5	39.3	31	0.0	2.8	108

PLAGUE INFECTION IN ALPINE AND KERN COUNTIES, CALIF.

Plague infection has been reported proved in specimens collected in Alpine County, Calif., as follows: Tissue from 1 ground squirrel, *C. beldingi*, shot at Hope Valley, 6 miles west of Woodfords, on Carson Pass Highway No. 88, proved positive on August 16; tissue from 2 ground squirrels, same species, shot at the same location, proved August 21; tissue from 1 ground squirrel, same species, shot at Kit Carson Public Camp, 4 miles west of Woodfords on Highway No. 89, proved September 6; a pool of 24 fleas from 2 golden

mantled ground squirrels, shot at Mono National Forest, Crystal Springs, Public Camp Grounds, 1 mile west of Woodfords, proved September 6.

Plague infection has been reported proved in specimens of fleas, lice, and tissue from ground squirrels, *C. beecheyi*, collected in Kern County, Calif., as follows: a pool of 200 fleas from 34 ground squirrels shot on the east side of Castair Lake and proved positive August 21, and 2 additional pools of 200 fleas each from the same 34 ground squirrels proved August 27 and August 30, respectively; a pool of 215 fleas from 14 ground squirrels shot 1 mile south of Lebec and proved August 22; a pool of 50 lice from 42 ground squirrels shot 2 miles east and 2 to 4 miles north of Lebec, proved August 30, and tissue from 1 ground squirrel shot at the same location, proved August 27; a pool of 200 fleas from 34 ground squirrels proved August 30, shot 2½ miles west and 1 mile south of Cummings Valley School, and a pool of 200 fleas from 53 ground squirrels proved September 6, shot 2½ miles south and 3 miles west of the same school.

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—July 1945.—During the month of July 1945, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	3		1						4	
Diphtheria	1		1				11		13	
Dysentery:										
Amebic	3		1		2		8		14	
Bacillary	1		1		1		1		4	
Leprosy				1			1		1	1
Malaria [1]	4		2		50		62	1	118	1
Measles			2						2	
Mumps			1		11		3		15	
Paratyphoid fever	1	1	1		2				4	1
Pneumonia		9		4	34			7	[2] 34	20
Relapsing fever							3		3	
Tuberculosis		26		4	6	1		12	[2] 6	43
Typhoid fever							3		3	
Whooping cough					4				[2] 4	

[1] 22 recurrent cases.
[2] In the Canal Zone only.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended August 25, 1945.—During the week ended August 25, 1945, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		1		20	38	2	29	29	14	133
Diphtheria		4	1	26		6				37
Dysentery, bacillary				4	1				5	10
Encephalitis, infectious						2				2
German measles				1	3		1		3	8
Influenza		10			14	1				25
Measles				16	46	1	23	11	7	104
Meningitis, meningococcus				1	2			1	1	5
Mumps		1		6	12	6	2	18		45
Poliomyelitis				5	[1] 11		1		1	[1] 18
Scarlet fever	6	1	12	30	25	7	2	8	4	95
Tuberculosis (all forms)		9	3	92	69	18	1	3	93	288
Typhoid and paratyphoid fever			2	12	2	1		3	5	25
Undulant fever					2			1	1	4
Venereal diseases:										
Gonorrhea	1	27	17	80	184	50	36	38	76	509
Syphilis		6		83	95	17	4	9	31	245
Whooping cough		4	1	134	53	4		12	3	211

[1] Includes 1 case, delayed report.

CHINA

Notifiable diseases—May 1945.—During the month of May 1945, certain notifiable diseases have been reported by the Army Medical Administration, Health Department of the Board of Supplies and Transport, The Chinese Red Cross Medical Corps, and the National Health Administration of China, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	156	10	Relapsing fever	1,178	20
Cholera	19		Scarlet fever	11	
Diphtheria	32	2	Smallpox	448	23
Dysentery	1,571	15	Typhoid fever	449	29
Plague	27	7	Typhus fever	471	32

FINLAND

Notifiable diseases—July 1945.—During the month of July 1945, cases of certain notifiable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	11	Paratyphoid fever	216
Chickenpox	324	Pneumonia (all forms)	847
Conjunctivitis	25	Poliomyelitis	51
Diphtheria	1,072	Puerperal fever	30
Dysentery, unspecified	42	Rheumatic fever	287
Gastroenteritis	7,191	Scabies	1,761
Gonorrhea	2,045	Scarlet fever	160
Hepatitis, epidemic	467	Syphilis	350
Influenza	264	Tetanus	3
Laryngitis	19	Typhoid fever	19
Malaria	190	Vincent's angina	42
Measles	29	Whooping cough	1,748
Mumps	214		

JAMAICA

Notifiable diseases—4 weeks ended August 25, 1945.—During the 4 weeks ended August 25, 1945, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chickenpox	4	10	Puerperal fever	----	1
Diphtheria	4	7	Scarlet fever	----	1
Dysentery, unspecified	3	6	Tuberculosis, pulmonary	36	69
Erysipelas	1	3	Typhoid fever	8	118
Leprosy	1	5	Typhus fever (murine)	7	4
Poliomyelitis	----	1			

NEW ZEALAND

Notifiable diseases—4 weeks ended August 11, 1945.—During the 4 weeks ended August 11, 1945, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Actinomycosis	1	----	Malaria	16	----
Cerebrospinal meningitis	17	3	Poliomyelitis	1	1
Diphtheria	108	8	Puerperal fever	10	1
Dysentery:			Scarlet fever	500	1
Amebic	3	----	Tuberculosis (all forms)	240	59
Bacillary	9	1	Typhoid fever	5	----
Erysipelas	25	----	Undulant fever	3	1
Influenza	1	----			

SWEDEN

Notifiable diseases—June 1945.—During the month of June 1945, cases of certain notifiable diseases were reported in Sweden as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	7	Scarlet fever	1,131
Diphtheria	118	Syphilis	129
Dysentery	14	Typhoid fever	19
Gonorrhea	1,221	Typhus fever	26
Hepatitis	424	Undulant fever	3
Paratyphoid fever	55	Weil's disease	5
Poliomyelitis	54		

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-named diseases, except yellow fever, during the current year. All reports o yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday of each month.

Cholera

China.—On August 28, 1945, cholera was reported present in the following provinces of China: Chekiang, Honan, Hunan, Hupeh, Kansu, Kwangsi, Kwangtung, Kweichow, Shensi, Sikong, Szechwan, and Yunnan.

Plague

Great Britain—Malta.—For the week ended September 1, 1945, 4 cases of plague were reported in Malta, Great Britain.

Italy—Taranto.—During the week ended September 15, 1945, 12 cases of plague with 4 deaths were reported in Taranto, Italy. These are believed to be the first cases of plague reported in Italy since 1929, when cases were reported in the Province of Naples, where the infection was thought to have been introduced in shipments of grain from South America.

Morocco (French)—Chaouia Region.—For the period August 21–31, 1945, 15 cases of plague were reported in Chaouia Region, French Morocco.

Smallpox

Bolivia.—For the month of August 1945, 235 cases of smallpox with 32 deaths were reported in Bolivia. Departments reporting the highest incidence are as follows: La Paz, 65 cases, 12 deaths; Cochabamba, 56 cases, 10 deaths; Beni, 52 cases, 5 deaths; Tarija, 30 cases, 4 deaths.

Morocco (French).—For the period August 21–31, 1945, 94 cases of smallpox were reported in French Morocco, including 26 cases in the region of Fez and 56 cases in Marrakech region.

Typhus Fever

Bolivia.—For the month of August 1945, 93 cases of typhus fever with 33 deaths were reported in Bolivia. Departments reporting the highest incidence are as follows: La Paz, 37 cases, 17 deaths; Potosi, 26 cases, 9 deaths; Cochabamba, 18 cases, 5 deaths; Oruro, 12 cases, 2 deaths.

Egypt.—Typhus fever has been reported in Egypt as follows: Weeks ended—August 11, 1945, 90 cases, including 1 case in Ismailiya; August 18, 1945, 10 cases; September 1, 1945, 8 cases, including 2 cases in Port Said.

Guatemala.—For the month of July 1945, 363 cases of typhus fever with 35 deaths were reported in Guatemala.

Morocco (French).—For the period August 21–31, 1945, 141 cases of typhus fever, including 69 cases in the region of Casablanca, 3 cases in the port of Casablanca, and 30 cases in Marrakech region, were reported in French Morocco.

Yellow Fever

Belgian Congo—Irebu.—On September 11, 1945, 1 case of suspected yellow fever was reported in Irebu, Coquithatville Province, Belgian Congo.

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ACTIVITIES OF INDUSTRIAL NURSES AND RECOMMENDED STANDARDS FOR NURSING IN INDUSTRY[1]

A Review

Findings of a Nation-wide survey of the work of industrial nurses, and recommendations for acceptable practices in this field, are presented in "Nursing Practices in Industry," Public Health Bulletin No. 283.

The survey analyzed in this bulletin was conducted in 1942, as a joint activity of a committee sponsored by the Public Health Nursing Section of the American Public Health Association and the Industrial Hygiene Division of the United States Public Health Service. Its

[1] Nursing practices in industry. By Olive M. Whitlock, Victoria M. Trasko, and F. Ruth Kahl. Pub-Health Bull. No. 283. Government Printing Office, 1944. For sale by the Superintendent of Documents. Washington 25, D. C. Price 5 cents.

purpose was to obtain factual information on the activities of industrial nurses, and upon this basis to determine the range of nursing activities, define current problems in this field, and formulate standards of good practice for nurses employed by industry.

An analysis is made of the activities of 3,027 full-time nurses serving approximately 2,400,000 workers in 868 industrial plants. The survey included also 22 plants where nurses were employed part time and 34 plants in which some form of health or first-aid service was carried on by nonprofessional workers.

Wartime production demands were found to have increased greatly the number of nurses employed in industrial establishments, with wide diversity existing as to the duties carried on by such nurses. In all plants, their chief functions consisted of nursing treatment and care of occupational injuries and illnesses and emergency care of nonoccupational illnesses, together with routine duties relating to the organization and maintenance of the medical department.

Other activities, and the extent of the nurses' participation in them, were: aiding in the medical examination program in 50 percent of the plants; assistance with accident control and safety education program in 42 percent of the plants; participation in health education program in 15 percent of the plants; assistance with environmental sanitation in 39 percent of the plants; participation in the plant welfare program, chiefly through advice to workers on personal and family problems, in 75 percent of the plants; and home nursing service in 25 percent of the plants.

As a result of the analysis, certain problems and needs in industrial nursing became evident. These included standards in nursing practices, professional preparation of industrial nurses for their duties, written standing orders, nursing supervision, the use of records and reports, the practice of using nurses for nonnursing duties, and the use of nonprofessional attendants in industry.

The lack of standards in nursing practices in industry and the lack of standing orders should no longer be major problems in industrial nursing. As a result of this survey, recommendations for acceptable practices in industrial nursing were made by the Advisory Group of the American Public Health Association's Committee to Study the Duties of Nurses in Industry. These are presented in the bulletin. Recommended qualifications for industrial nurses, suggested record and report forms, and reference materials are also included in the bulletin.

EXPERIMENTAL STUDIES ON THE TOXICITY AND POTENTIAL DANGERS OF TRINITROTOLUENE (TNT)[1]

A Review

Methods were developed for the determination of 2,4,6-trinitrotoluene, 2,6-dinitro-4-aminotoluene, and 2,6-dinitro-4-hydroxylaminotoluene, and the urinary excretion of these substances was studied. Attempts to produce TNT poisoning in dogs by inhalation of its vapors were unsuccessful because a sufficiently high concentration could not be produced. Daily intratracheal insufflation of 25 to 50 mg./kg. TNT caused salivation, vomiting, diarrhea with tenesmus, and spasms of the sphincter of the urinary bladder. The animals showed signs of weakness and incoordination and a temporary anemia, but no significant changes of the blood picture nor definite signs of liver injury. The daily oral administration of 50 mg./kg. caused a train of symptoms arising from the central nervous system, irritation of the gastrointestinal tract, temporary anemia, but no definite liver injury. The spectrophotometric examination of the blood gave no evidence of the presence of other chromogenic substances. There was a moderate methemoglobinemia, associated with the appearance of Heinz's bodies in the red blood cells. Daily administration of 150 mg. of ascorbic acid over a period of 12 weeks did not change the toxicological picture materially, whereas the addition of milk to a balanced basic diet caused a moderate alleviation of the gastrointestinal symptoms, presumably by its demulcent action. Experiments with guinea pigs fed doses of 400 mg./kg. TNT showed that animals on a scorbutogenic diet were more susceptible to TNT than normal animals, but that the addition of an excess of ascorbic acid did not increase the resistance of the animals to the toxic effects of TNT.

The experiments show that TNT is readily absorbed through the lungs when inhaled as dust, from the intestinal tract when ingested, and in small quantities through the intact skin when in intimate contact.

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[1] Experimental studies on the toxicity and potential dangers of trinitrotoluene (TNT), by W. F. von Oettingen, D. D. Donahue, R. K. Snyder, B. L. Horecker, A. R. Monaco, A. H. Lawton, T. R. Sweeney, and P. A. Neal. Pub. Health Bull. No. 285. Government Printing Office, 1944. For sale by the Superintendent of Documents, Washington 25, D. C. Price 15 cents.

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